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THOMAS SAY.—II.

By Prof. F. M. WEBSTER, Wooster, Ohio.

In 1824, Mr. Robert Owen purchased the lands belonging to the Harmonists, a communistic religious association that had migrated from Butler County, Pennsylvania, in 1815, and under the leadership of George Rapp, founded the village of New Harmony, and were known as Harmonists or Rappites. The village was already established when Messrs. Owen and Maclure, accompanied by Thomas Say, moved there too in 1825. The resident buildings that had been erected by Rapp and his followers have many of them ceased to exist, in 1889, only two being recognizable by their quaint, German architecture, one of them, very fortunately, being the one occupied by Say and his wife Lucy, before they moved into the Maclure house, in which Say died. The building is shown as it appeared a few years ago, but since that time it too has been remodeled and rebuilt, and is not now recognizable. The engraving, however, shows it as when occupied by Say, except that it had once been reshingled. Our knowledge of the daily life of Mr. and Mrs. Say is exceedingly fragmentary, the oldest inhabitants now only remembering

SAY'S HOME AT NEW HARMONY.

them as middle-aged people, when they were themselves very young. How long they occupied this house I have been unable to learn; quite likely until the health of the naturalist made a removal either more convenient or necessary, and it is probable that within its walls much of the work in preparing his third volume of American Entomology was accomplished, as well as much of his work on American Conchology, six numbers of which were printed at New Harmony prior to his death. In habits he appeared to have here carried his abstinence to excess, and allowed himself only so much and no better food than nature absolutely demanded to sustain life, while taxing himself with labors entirely out of proportion to his state of health and the nature and quantity of his food. Besides his work in the two branches of Natural History, Entomology and Conchology, he was the resident agent of the whole property of the settlement, and as before always ready to give his time and energy to aid such as chose to ask him for his services. Entomologists will here find the causes for his overlooking several species of insects, or at least not mentioning them, though they must have occurred abundantly at the time of his residence in New Harmony, and within a few miles thereof. People now living, who knew him in those days remember him as a mild, unassuming, lovable man, whom to meet was to respect, for his name was synonymous with honor, and his word always the expression of truth. His wife is remembered as a very amiable lady, scrupulously neat in all that pertained to herself or her household, though somewhat given to complaining.

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ABERRATION, VARIETY, RACE and FORM.

By Dr. RODRIGUES OTTOLENGUI.

(Continued from page 11, vol. vi, ENT. NEWS.)

Prof. A. R. Grote writes: The exact limits between "Varieties," "Forms," "Aberrations," have not been absolutely defined. These terms, together with "Dimorphic forms," "Species Darwinianæ," have been employed to designate more or less constant or extensive variation from the type. "Race" and "Form" seem used in the same sense, and are terms applied to variations dependent on locality, the whole species as there occurring, showing some departure from the type. Variation in color or marking when occurring among the typical examples is

variety, and varieties should receive a Latin name. For instance, *Agrotis wilsoni* occurs in a typical olive-gray variety, and in a red variety (var. *specialis*). It does not matter that intermediary examples exist. The terms must be employed in order to designate properly the variety. It is the property of varieties that they intergrade, of species that they do not pass into one another. So with *Agrotis tessellata*. Prof. Lintner once showed me a box full of *tessellata*. A certain proportion were my variety *atropurpurea*. These could be at once picked out and the varietal name is vindicated by the fact. The detection of varieties worthy of the name, is a matter of the tact and experience of the lepidopterist. Cases of small and individual variation should not receive a name. If one is given it should be relegated into the synonymy.

An aberration is an occasional strong divergence, and to receive a name must at least be a remarkable one. The limit between aberration and variety is not clear. Some entomologists only recognize as valid varieties such as they have themselves named. The varieties of other authors they consider synonyms. Staudinger's catalogue attempts a classification of variation.

The whole subject of variation is now engaging the attention of lepidopterists in England, and the works there being published by Mr. J. W. Tutt should be attentively studied by American lepidopterists. The subject is one not finally or fully understood, hence what you have to say will possess a great interest. I may say, in conclusion, that only by breeding from the egg will the true forms appear, and thus the matter may be decided whether a debatable form is a species or a variety.

Mr. Dyar says: I understood by a variety an example of a species differing from the normal form. In the special sense it is a group of individuals like each other, but of less than specified rank. The variety may (*a*) intergrade with the normal form, or (*b*) it may not. In the latter case it is either an aberration, dimorphic form, or a local race. An aberration is a variety that occurs in a single instance or very rarely. I understood "form" to be a general term covering "variety," but not necessarily less than specified rank. I would always name a dimorphic form or a local race. The practice of naming intergrading varieties can so easily be carried to extremes that I do not like to advise it. As to aberration when distinct and of quite different appearance

from the normal form a name may be desirable, but on the whole I do not like the practice. I would never name a "form" as such. If possible decide whether it is a (1) species, (2) dimorphic form, (3) race, (4) intergrading variety, or (5) aberration; (named in the order of importance). From a simple specimen it would be impossible to tell to what rank to assign it, except by analogy with other species in the genus. If it comes from a locality where the normal form was known it could not be a race; the exact location could only be determined by breeding.

Mr. B. Neumoegen replies as follows: This is in reply to queries about variety, form, and aberration. The true sequence should be—1st, what you call form; 2d, aberration; 3d, variety or variation. There is no such thing to my knowledge as "form;" you probably mean "race" by it.

In our (Neumoegen and Dyar) preliminary revision of the Bombyces of N. A. (Journal of N. Y. Entomological Society) we say "Local forms breeding true to type, but differing in no great extent from the ground form are classed as races, whether connected by intergrading forms in the intermediate territory or not. Since the difference between the local race, or local species may be a matter of degree only." The forms are placed according to our present judgment, and may be differently classed by other authors. We recognize seasonal, dimorphic forms, in a few instances. All the varieties referred to by us, are supposed to inhabit the same territory as the typical form, and not to breed true to type. We have not considered aberrations as distinct from varieties. This will give you the key to the question, and I therefore answer,—

First comes the ground form, or the typical insect.

Second the race, being a local form, differing in no great extent from the ground form.

Third the aberration, totally varying in appearance from the ground form, but not denying the main typical characters, and to be found only in single or very few specimens at any time or place.

Fourth, the variety, which is not breeding true to type and varies in appearance, but which remains true in this appearance in any number or quantity of insects, and shows conclusively that varieties are the precursors of coming species. They are

the faithful agents of evolution and the future student who may take up the difficult task, by aid of fossils, of trying to explore the original species may be able to find out how many varieties have formed into good species, in the course of centuries.

Dr. Henry Skinner writes thus: Your questions are great puzzles, and have been agitating the scientific mind for years, and volumes have been written on the subject, and yet nothing definite or fixed has been accomplished. I doubt whether absolute definitions can be given for the terms you mention as the whole thing is one of individual opinion. Of course you do not expect me to write a treatise on the subject, and I will give you my ideas in a very brief way.

The three terms are gradational, and represent individuals, more or less removed from the specific form. The greatest deviation in structure is a monstrosity. The next farthest removed is an aberration, the next a form and the least removed a variety. I would define an aberration as a well-marked deviation, occurring at rare intervals such as *Vanessa antiopa lintneri*. I think the word form should be limited to well-marked deviations which are either sexual, seasonal or geographical; as illustrations of the sexual class I would cite *Papilio glaucus*, and the white forms of *Colias*. Of the seasonal the forms of *Papilio ajax;* of the geographical, the female insular forms of *Papilios* found in the East India islands, etc.

Under the head of varieties I would put the least deviations or those not comprised in the first two classes.

In regard to the other question I think it would be best not to name varieties when there is no question as to what the species is.

Prof. Packard replies: A variety is usually regarded as an incipient species not yet fixed, but varieties are of different value in different groups and species. The word form, is a general one, to denote a species or variety, or even a genus. An aberration is an abnormal specimen not generally subject to heredity; it is a sport. I should not give a name to either of these if I could possibly help it, but a name may be given to a variety if it is a local or climatic one, such as appear year after year in one place. Under such circumstances it is well to give a name, a local one. But one should try to keep synonyms down, not multiply scientific names, as they are a grievous burden to science.

Many are repelled from the study on account of the burdensome nomenclature.

One would have to use his judgment in deciding what is a new variety, form or aberration. A beginner or an amateur should not publish new names without using great care, or feeling sure he is correct. Skill in detecting varieties, etc., comes with experience, and the best of all make mistakes. I think careful, conservative views should prevail, and I hope you will inculcate these virtues in young students; and I think it much better for them to give their time to studying the habits, structure and transformation of insects than to collecting and describing supposed new species.

* * * * * * *

Thus we find that quite a diversity of opinion exists among well known students, and I can scarcely hope that my own views will be convincing, though it would be very good if some definite meaning could be assigned to what, after all, would strike the beginner as being elementary terms.

In looking over the above letters the point that seems most worthy of discussion is that relating to intergrades.

Dr. Hulst describes Variety thus: "Forms distinct, but intergrading more or less in any locality."

Prof. Smith says that a variety does not breed true, but occurs in reasonable proportion independently of season or locality. Then he continues: "It is to be understood also that there is no regular succession of intermediate forms between this variety and the usual form. Where a range of intermediate forms exists I would not consider the extreme entitled to a name."

(To be continued.)

Relationship of Pyralidæ and Pterophoridæ from the Larvæ.

By HARRISON G. DYAR.

In connection with the controversy on these groups, started by Mr. Tutt, I would like to present to the readers of the NEWS an outline of a system of classification based on the larvæ. This will be presented more fully elsewhere, but in this place its bearing on the relationships of the Pyralidæ and Pterophoridæ may be of interest.

Accepting Prof. J. H. Comstock's division of the Lepidoptera

into the suborders Jugatæ and Frenatæ, I would divide the latter into six superfamilies on the arrangement of the tubercles of the larvæ In response to a tendency for these tubercles to be arranged in a single transverse row, tubercles iv and v have become consolidated into one in the first three superfamilies, and later tubercles i and ii have been likewise united, or else tubercle ii disappears. In the three highest families the tubercles have tended to form two alternating rows. According to these characters the superfamilies separate as follows :

Tubercles iv and v approximate or consolidated.
  Tubercles i and ii remote . . . . . MICROLEPIDOPTERA.
  Tubercles i and ii consolidated . . . . . ANTHROCERINA.
  Tubercles i and ii remote, ii disappearing at the first moult. BOMBYCINA.
Tubercles iv and v remote.
  Tubercle iv behind the spiracle, v below it . . . . . NOCTUINA.
  Tubercle iv below, v in front of spiracle . . . . . SPHINGINA.
  Tubercles iv and v in line, except in some Nymphalidæ, where secondary armor is developed . . . . . RHOPALOCERA.

The MICROLEPIDOPTERA include the Psychidæ, Cossidæ, Pyralidæ, Tortricidæ, Sesiidæ, Tineidæ and Lacosomidæ; the ANTHROCERINA the Pterophoridæ, Anthroceridæ, Pyromorphidæ, Megalopygidæ and Eucleridæ; the BOMBYCINA the Citheroniidæ, Hemileucidæ,* Saturniidæ* and Bombycidæ; the NOCTUINA the Notodontidæ, Thyatiridæ, Geometridæ, Drepanidæ, Agaristidæ, Noctuidæ, Cymbidæ, Lithosiidæ, Pericopidæ, Arctiidæ, Euchromiidæ and Lymantriidæ, and perhaps also the Thyridæ, Dioptidæ, Brephidæ and Lasiocampidæ† ; the SPHINGINA the Sphingidæ, and the RHOPALOCERA the families usually associated under that term.

Thus, from the larval characters which I use, the Pyralidæ and Pterophoridæ are placed in two separate, but closely allied superfamilies. I see no reason for giving the families the superfamily ending as has been done recently. I regret that I have not seen the larva of Orneodes, so I cannot throw any light on the position of the family it represents. However, if Dr. Hulst had read carefully Dr. Chapman's really good articles (to which Mr. Tutt refers) I think he would appreciate better the force of the argu-

* Not in the sense used by Prof. Smith. My classification corresponds more nearly with that of Grote's Check List 1882.

† These I have not examined sufficiently. The Lasiocampidæ will probably form another superfamily.

ment from the hooks on the prolegs. The character referred to is supposed by Dr. Chapman to offer a positive diagnosis between micro- and macro-heterocera (*i e.* the complete ring of hooks is characteristic of the Microlepidoptera as here set forth). As a matter of fact, there are certain exceptions* which vitiate Dr. Chapman's generalization, though it is certainly true in the great majority of instances.

Science is cosmopolitan, and it must appear that Dr. Hulst has allowed himself to be carried too far by his enthusiastic Americanism.

———o———

NOTES ON TYPES OF NORTH AMERICAN GEOMETRINA IN EUROPEAN COLLECTIONS.—III.

By Geo. D. Hulst.

(Continued from page 15, vol. vi, Ent. News)

The type of *Endropia warneri* Grt. is in the Museum. It is not an exact counterpart of *E. apiciaria* Pack., though the same species. The outer line is more bent than in *E. apiciaria*, and it thus makes an approach towards *E. hypochraria* H.-Sch.

Endropia astylusaria Wlk. 152, *E. madusaria* Wlk. 153, *E. oponearia* Wlk. 153, *E. tiviaria* Wlk. 250, are the same. In this case, as in the most of others to which I make reference in these notes, there may be much variation of appearance. The synonymy, as I express it, is intended to be my view of specific relation only. Mr. Warren puts *E. vinulentaria* G. & R. as a synonym, but with this opinion I do not agree.

Endropia tigrinaria Gn. i, 149, *E. propriaria* Wlk. 249, are the same as *E. obtusaria* Hbn. I believe *Clysia decisaria* Wlk. 47, is the same also.

Endropia deductaria Wlk. 151, is a synonym of *E. pectinaria* Den. & Schif.

Endropia effectaria Wlk. 1504, is a good species.

Probole amicaria H.-Sch. will have the following standing under it: *P. alienaria* H.-Sch., *Hyperetis nyssaria* Gn. i, 118, *exsinuaria* Gn. i, 118, *H. persinuaria* Gn. i, 119, *H. insinuaria* Gn. i, 119, *Macaria laticincta* Wlk. 885, *Azelina neonaria* Wlk. 186, *Selenia æsionaria* Wlk. 183, and *Hyperitis nepiasaria* Wlk.

* Some Pyralidæ have the circle of hooks incomplete. The Drepanidæ have a complete circle, but the outer half is different from the inner (secondary ?).

146. The latter is a very distinct variety, but not entitled to specific rank.

Mr. Warren, without knowledge of the types, places *Eubyja quernaria* A. & S., *Synopsia phigaliaria* Gn. i, 225, *Eubyja cupidaria* Grt., *E. mexicanaria* Grt. and *E. pænulataria* Grt., as one species, which is rather wild, to say the least. *Phigaliaria* Gn. and *pænulataria* Grt. are the same, but are very distinct from *quernaria*. *Cupidaria* and *mexicanaria* are also distinct from that species, and from each other. Indeed, in my opinion, these species are not all congeneric.

The type of *Biston virginarius* Grt. is in the Museum. It is unspread, but is a fresh specimen. I could not well examine it under the circumstances. It is much like *B. ursarius* Wlk. 304, but the outer whitish band on the fore wings is broken, and the outer line is strongly dentate.

Amphidasys sperataria Wlk. 307, is a synonym of *Eubyja cognataria* Gn.

Phigalia revocata Wlk. 1527, is the same as *Phigalia strigalaria* Minot. I have no doubt but they are the same as *Phalæna Geometra titea* Cram.

I agree with Dr. Packard in his reference of the Boarminæ of Guenée and Walker. *Boarmia humaria* Gn. has as synonyms *B. defectaria* Gn. i, 247, *B. intraria* Gn., *B. moniaria* Wlk. 345, *B. ephyraria* Wlk. 349, *Phibalapteryx erosiata* Wlk. 1718, *B. albigenaria* Wlk. 348, *B. illaudata* Wlk. 397, *B. transfixaria* Wlk. 347, and *Tephrina expressaria* Wlk. 1657. I have in my notes also *Anisodes? intractaria*, but I have a suspicion I may have made an error.

Tephrosia occiduaria Gn. i, 266, *Boarmia signaria* Wlk. 346, *Tephrosia spatiosaria* Wlk. 403, *B. intrataria* Wlk. 403, and *Tephrosia abraxaria* Wlk. 403, are the same as *B. crepuscularia; abraxaria* is quite a distinct variety, and has been described by me as *fernaldaria*. *Boarmia cineraria* Wlk., 488 is another synonym.

Boarmia sublunaria Gn. i, 248, *frugaliaria* Gn. i, 246, *B. collecta* Wlk. 397, and *B. fraudulentaria* Zell., are *B. pampinaria* Gn. i, 245.

Boarmia indicataria Wlk. 346, *B. filaria* Wlk. 347, and *B. polygrammaria* Pack. are the same.

Boarmia gnopharia Gn. i, 251, is the same as *B. umbrosaria* Hbn., *B. porcellaria* Ab. & Gn. is almost surely the same.

Acidalia sparsaria Wlk. 1596, is one with *Boarmia psilogrammaria* Zell. Here is one instance where Walker is right, and Zeller wrong, as the insect is an *Acidalia*, and has no affinity with *Boarmia*.

A type of *Boarmia plumosaria* Pack. is in the Museum. It is beyond doubt a synonym of *larvaria* Gn. The antennæ are somewhat deceptive in appearance. The ends are broken off, the pectinations are spread out, so they appear lengthily plumose to the end. But it is not the same species figured and described by Packard under this name, nor is it the same as the type in the Cambridge Museum.

Boamria signataria Wlk. 350, *Tephrosia imperfectaria* Wlk. 407, and a specimen marked *T. contribuaria* are one with *Tephrosia canadaria* Gn. i, 263.

Boarmia imitata Wlk. 395, is *Tephrosia californiaria* Pack.

Aspilates acidaliaria Wlk. 1684, and *Aspilates infixaria* Wlk. 1685, are the same as *Tephrosia cognataria* Hbn.

Tephrosia submuraria Wlk. 406, is a synonym of *T. anticaria* Wlk. 404. *Boarmia intextata* Wlk. 398 is, I think, the same, and has priority.

Cidaria albifusata Wlk. 1728 is a synonym of *Larentia? exornata* Wlk. 1187.

Aspilates canosaria Wlk. 1674, with *pulchraria* Minot, is a synonym of *Endropia semiclusaria* Wlk. 1501.

Anisopteryx restituens Wlk. 1697, is the same as *A. pometaria* Harr.

Anisopteryx scriceiferata Wlk. is the same as *Paleacrita vernata* Peck.

Melanippe reciprocata Wlk. 1294, is a synonym of *Odezia albovittata* Gn. ii, 520.

Aspilates? ordinaria Wlk. 1068, is the same as *Lozogramma extremaria* Wlk. 984.

Cidaria? gibbocostata Wlk. 1388, and *Larentia costinotata* Wlk. 1701, are the same as *Marmopteryx strigularia* Minot.

Aspilates intermicata Wlk. 1076, is the same as *A. pervaria* Pack. The type of var. *interminaria* Grt. is in the Museum.

Corycia hexaspilata Wlk. sup. 1653, is a synonym of *Heterophleps triguttata* H.-Sch.

Macaria? refusata Wlk. 891, is the same as *Heterophleps harveyata* Pack. and antedates it.

Scotosia hæsitata Gn. ii, 444, *S. impanperata* Wlk. 1363, and *Philereme albosignata* Pack. are one species.

A MSS. species, type in the Museum, *Scotosia differens* Warr. is *Triphosa indubitata* Grt. If it be applied to the melanic and suffused form it is then a synonym of *T. pustularia* Hy. Edw. This is the insect identified by Walker as *Scotosia affirmaria* Gn. Can. Nat. v, 264. It is very like that species, but different.

A specimen of *Operophtera bruceata* Hulst, has on it a label, *Anisopteryx remota* Pack. I am not aware that Dr. Packard ever described a species by that name.

Lobophora fuscifasciata Wlk. 1258, *Larentia longipennis* Wlk. sup. 1671, *Scotosia lobophorata* Wlk. 1347, are the same as *Lobophora anguilineata* Grt. Mr. Warren joins as the same species, *L. vernata* Pack. and I incline to the belief that he is right.

Lobophora atroliturata Wlk. 1710, is the same as *L. geminata* Wlk.

Lobophora? nivigerata Wlk. 1259, is a dark form of *L. inæqualiata* Pack.

Phibalapteryx impleta Wlk. sup. 1683, and *P. indoctrinata* Wlk. 1722 are synonyms of *P. intestinata* Gn. ii, 432.

Cidaria luscinata Zell. is the same as *Phibalapteryx latirupta* Wlk. 1684.

Cidaria? frigidata Wlk. 1729, *Larentia? renunciata* Wlk. 1187, and *Ypsipetes pluviata* Gn. ii, 378, are synonyms of *trifasciata*. Mr. Moffat tells me *Cleora divisaria* Wlk. 489, is the same species.

Melanippe gratulata Wlk. 1273, is *M. brunneiciliata* Pack. and has priority.

Petrophora truncata var. *thingvallata*, described, I think, by Stephens, is the insect afterwards described by me as *Cleora atrifasciata*. The Museum specimens are very much smaller than mine, expanding scarcely one-half as much.

Larentia flamifera Wlk. 1184, is *Larentia hersiliata* Gn.

Larenta cerivinifascia Wlk. 1184, is a variety of *populata*. It is very close in appearance to the variety *comma-notata* Haw. *Cidaria remotata* Wlk. 1388, *C. molliculata* Wlk. 1390, *C. propulsata* Wlk. 1389, and *Pelurga similis* Wlk. 1425, are all forms of the same species, the American *populata*, called by Prof.

Lintner *packardata*. The variations are very wide, but are all shown in the set of *populata* in the British Museum.

Cidaria explanata Wlk. 1422, and *C. cunigerata* Wlk. 1726, are, I think, the same species. In *C. explanata* the central band is nearly unbroken.

(To be continued.)

THE typographer-beetle, *Bostrichus typographus*, is so called on account of a fancied resemblance between the paths it erodes and letters. This insect bores into the fir and feeds upon the soft inner bark; and in such vast numbers that 80,000 are sometimes found in a single tree. The ravages of this insect have long been known in Germany under the name of *Wurm troekniss*—decay caused by worms; and in the old liturgies of that country the animal itself is formally mentioned under its common appellation, *The Turk*. About the year 1665, this pest was particularly prevalent and caused incalculable mischief. In the beginning of the last century it again showed itself in the Hartz forests; it reappeared in 1757, redoubled its injuries in 1769, and arrived at its height in 1783, when the number of trees destroyed by it in the above-mentioned forests alone was calculated at a million and a half, and the whole number of insects at work at once 120,000,000,000. The inhabitants were threatened with a total suspension of the working of their mines for want of fuel. At this period these Bostrichi, when arrived at their perfect state, migrated in swarms like bees into Suabia and Franconia. At length, a succession of cold and moist seasons, between 1784 and 1789, very sensibly diminished the numbers of this scourge. In 1790 it again appeared, however, and so late as 1796 there was great reason to fear for the few fir trees that were left.—*Cowan's Curious Facts.*

MANY species of Buprestidæ are decorated with highly brilliant metallic tints, like polished gold upon an emerald ground, or azure upon a ground of gold; and their elytra, or wing coverings, are employed by the ladies of China, and also of England, for the purpose of embroidering their dresses. The Chinese have also attempted imitations of these insects in bronze, in which they succeed so well that the copy may be sometimes mistaken for the reality. In Ceylon and throughout India, the golden wing-cases of two of this tribe, the *Sternocera chrysis* and *S. sternicornis*, are used to enrich the embroidery of the Indian zenana, while the lustrous joints of the legs are strung on silken threads, and form neck-laces and bracelets of singular brilliancy. The *Buprestis alternata*, *ocellata* and *vittata* are also wrought into various devices and trinkets by the Indians. The *B. vittata* is much admired among them. This insect is found in great abundance in China and thence exported into India, where it is distributed at a low price.—*Cowan's Curious Facts.*

ENTOMOLOGICAL NEWS.

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PHILADELPHIA, PA., FEBRUARY, 1895.

A MONUMENT TO THOMAS SAY.

THE interesting articles on Thomas Say now appearing in the NEWS recall the fact that the "Father of American Entomology" has been dead sixty-one years. Much progress has been made in the study during that time, and doubtless Say would be much astonished if he could return to this sphere and see the advancement of the study. Some time ago Mr. Philip Laurent suggested that it would be a very grateful act for the entomologists of America to erect a monument in memory of Thomas Say. We have mentioned this subject before in the NEWS and recalled the fact that the ornithologists of America have erected a monument to Audubon in Central Park, New York. Philadelphia, the birth-place of Say, would be the proper place for such a monument, and it is to be hoped that some day this may be accomplished. It would not be a difficult matter to start a Say monument fund in each of the entomological societies of the country and thus collect the necessary amount. If such a thing were done it would show how much love and pride entomologists have in the study, and it would also show the world at large that there is an important study known as entomology, and that it has many enthusiastic devotees.

TWO PRACTICAL HINTS.—We notice two notes of interest in the "Entomologist's Record and Journal of Variation" for Aug. 15, 1894. Mr. F. J. Buckell writes that flies always pester him "to infuriation," and that he has found that a liberal sprinkling of Eucalyptus oil on his coat collar and face keeps them away. Rev. C. R. N. Burrows, of Rainham, finds that the use of methylated spirit instead of rum for mixing with sugar when sugaring for insects, greatly increases the attractiveness of the mixture.

DEPARTMENT OF ECONOMIC ENTOMOLOGY.

Edited by Prof. JOHN B. SMITH, Sc. D., New Brunswick, N. J.

"Insect Lime."—More properly this should be "insect glue," because the German word is "leim;" but the term "lime" has somehow or other come into quite general use, and will probably be continued. "Raupenleim" is a product of Germany, of a jelly-like consistency, very dark brown in color, with a flavor of carbolic acid in the smell, and is supposed to retain its sticky qualities when exposed to the air, rain, etc., for a period of from two to three months or more. It is used principally to trap insects that crawl up and down the trunks of trees, and its usefulness for that purpose has been demonstrated. It replaces effectually all those devices like tin collars or troughs used for trapping canker worms, and all bands of cotton, paper, or other material wherever they have been recommended. In our own country this material has not been used to any extent except in Massachusetts by the Gipsy Moth Commission, who have found it useful within limits in their work against the Gipsy moth. It is probable that after a time this substance, or some substitute for it, will come into more general use in this country, and if some little modification can be made in it which renders it somewhat more fluid, so that it can be put on with a brush like thick paint, its field will probably be a large one. One of the most difficult classes of insects to deal with are borers, whatever the order to which they may belong. It is rarely that we are able to reach the insects themselves in their burrows, and usually we can only protect our trees by covering them with some substance that is either repellant or forms a mechanical coating. In repellants I have no faith whatever, unless the odor is absolutely poisonous, and then the effect is not due to the odor, but to the poisonous action. Mechanical coatings have been used with more or less success; but they have rarely been complete enough to answer every purpose, and have in most cases labored under the disadvantage of not being persistent in character and requiring renewal at short intervals. Lime in some form has been very largely used, and where the coating was properly kept up with very good success. At the base of trees, like peach trees for instance, newspapers and other similar coverings have been used, and in some orchards I have seen wire mosquito netting used to protect the trunks of the trees from the insects. In this case the object was to keep the adults from getting at the trunk, so that they could not lay their eggs. In the other case there was nothing to prevent the laying of eggs; but the lime, which is often poisoned, would form a sufficient barrier against the very young larvæ; yet all these substances have not been quite satisfactory. The thing that is required or needed, is a substance that is easy of application, that can be put on so as to form an absolutely impenetrable coating, that will retain its properties for at least a month, and that will not be injurious to

the tree. An additional advantage that it should possess, is cheapness. Now, "insect lime" possess some of those advantages, and may perhaps be modified, so that it may possess all of them. It has been proved by use in Germany to be absolutely harmless to plants, and I am informed that the trunk of a moderately large growing tree may be entirely coated with this substance without in any way endangering the tree itself. The outer bark in large trees possesses no functions necessary for the continued growth or development of the tree, and covering with any viscid substance which is not poisonous would not injuriously influence its growth. The line of insects against which such an application could be used is large; for instance, all peach trees could be protected against the attacks of the borer. It would not only prevent the moth from laying its eggs, but if she alighted on the trunk covered by this "lime" the chances are that she would be caught and remain sticking to it. Apple trees could be protected against the *Saperda* in much the same way. Pear trees could be protected against the attacks of *Scolytus*, and of course other trees as well where they are subject to the attacks of these insects. A coating put on early in the Spring before the leaves start would absolutely prevent the emergence of any insects in the bark on the trunk, would prevent the hatching of any eggs, and would prevent all insects lying dormant in the crevices from making their way out. This would be an especially useful thing in the case of the Pear Psylla for instance, that hibernates in the crevices of the bark on the trunks of pear trees, and if the application was made early enough to inclose the insects and prevent them from coming out injury for the balance of the season need not be feared. In fact, the number of uses to which a substance of this kind could be put is very great, and the suggestion is made here in order to induce entomologists, as well as farmers and horticulturists, to test this substance during the ensuing season. The American agents for the "insect lime" are Wm. Menzel & Son, 64 Broad St., New York City, N. Y.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

[The Conductors of ENTOMOLOGICAL NEWS solicit, and will thankfully receive items of news, likely to interest its readers, from any source. The author's name will be given in each case for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for certain issue. Twenty-five "extras" without change in form will be given free when they are wanted, and this should be so stated on the MS. along with the number desired. The receipt of all papers will be acknowledged.—ED.

DURING my weekly vacation this year I went to Cumberland, the northern part of the State, and got about one hundred specimens, mostly

Lepidoptera. In luring I did not catch much, except Catocalæ, the smallest Noctuidæ did not seem to be represented at all. I think the electric lights have diminished insects to a great extent; before we had them round us I could find *Cecropia* cocoons in my yard, and for the past year or two I have not found them nearer than a mile and a half of the city limits. The *Anisota senatoria* used to be very destructive to shrub oaks round here, but this year I could not find but one or two trees that had been eaten by them. In walking to my place of business I always look under the electric lights, but very seldom find anything worth picking up.—EDWARD D. KEITH, Providence, R. I.

TARDINESS OF IMAGINES from first brood reared north and emergence of second brood of pupæ in Autumn. Of a lot of *Smerinthus geminatus* bred from ova, Aug. 3, 1894, which transformed within four weeks, a large number imagines appeared, fully eighty per cent., between September 18th and 29th. Of a number of collected larvæ of *Paonias myops*, second brood also, which pupated last week of August, several of the perfect insects emerged during latter half of September. Usually, these are exceptions to the general rule. Stranger behavior occurred among *Ceratomia catalpæ*. Larvæ collected south, raised here, which pupated between June 12 and 19, 1894, with the exception of two or three imagines, refused to come out. An equal number of larvæ bred from the very same lot of first brood down south, which pupated same time, and were shipped north, almost the entire number emerged before July 20th. Perhaps a four-days' travel in the mail-bag, during a heated term, hastened matters.

Dr. R. E. KUNZE.

DO INSECTS PLAY?—Under the title "The habit of amusement in the lower animals," Mr. James Weir, Jr., in "The American Naturalist" for October last, brings together a number of observations which he considers as bearing upon the thesis that certain of the lower animals play. The insect instances advanced are: first, the dancing in swarms of certain midgets. He does not consider these swarms as mating swarms, since on numerous occasions and at different seasons of the year, he has examined dozens and found them all to be unimpregnated females; he never discovered a male among them. Further, he refers to the observations of certain naturalists upon ants, showing that when these insects assemble upon the surface of their nests, they sometimes behave in a way which can only be explained as a simulation of festival sports or other games. He has also observed a flea play what he considered to be a practical joke upon an individual of the same species, and he has also seen certain female Coccinellids indulge in "true psychical amusement." There is room for additional observations in this interesting field, but it is one in which the observer is very apt to jump to unjustified conclusions.

ON ANT STINGS.—Mr. Herbert H. Smith, in an interesting letter recently received, writes as follows concerning the stings of S. American ants:

"Among the worst of stinging insects are ants; the large *Poneras* (or *Monopera?*) sting worse than a hornet. My wife was once stung by a dozen or so. She had fever in consequence and was kept awake for a whole night. The Mundurucu Indians of the river Tapajos have a unique test which, as is well attested, young men endure before they take a wife. They fill basket-work bags with the Ponera ants and thrust their arms in them to the shoulder. Sometimes with the bags tied on their arms they dance through the village. After the test the man throws himself in a stream, remaining there for hours, but this does not prevent fever. The foraging ants (*Eciton*) sting painfully and attack everything in their way. The little "fire-ants" (*Myrmica*), to my knowledge, have sometimes depopulated villages; for instance, the village of Aveyros on the Tapajos, now re-peopled. This village, which I saw, was one vast nest of the ants. A single sting is insignificant, but when a thousand ants attack you at once, the matter becomes formidable. The *taixi* tree of the Amazon takes its name from a little ant always found on it, which, for its size (about one-fourth inch long), is the most terrible insect I know of; the sting is like a red hot needle. I do not know the genus."

Identification of Insects (Imagos) for Subscribers.

Specimens will be named under the following conditions: 1st, The number of species to be **limited to twenty-five** for each sending; 2d, The sender to pay all expenses of transportation and the insects to become the property of the American Entomological Society; 3d, Each specimen must have a number attached so that the identification may be announced accordingly. Exotic species named only by special arrangement with the Editor, who should be consulted before specimens are sent. Send a 2 cent stamp with all insects for return of names. Before sending insects for identification, read page 41, Vol. III. Address all packages to ENTOMOLOGICAL NEWS, Academy Natural Sciences, Logan Square, Philadelphia, Pa.

Entomological Literature.

1. LA NATURALEZA, ii, 5. Mexico, 1893. [Received Dec. 17, 1894.] —A new species of *Lecanium* from Mexico, T. D. A. Cockerell.

2. THE ANNALS AND MAGAZINE OF NATURAL HISTORY. London, December, 1894.—The dates of Moore's "Lepidoptera Indica," C. D. Sherborn.

3. THE PROCEEDINGS OF THE LINNEAN SOCIETY OF NEW SOUTH WALES (2), viii, 4. Sydney, June 5, 1894.—A second note on the Carenides, with descriptions of new species, T. G. Sloane. Note on the occurrence of *Icerya ægyptiacum* Dougl. in New South Wales, W. W. Froggatt—ix, 1, Sept. 4, 1894. On the nests and habits of Australian Vespidæ and Larridæ, W. W. Froggatt. On the life-histories of Australian Coleoptera—ii, id. Note on the discovery of a destructive Floridian Coccid (*Icerya rosæ* Riley and Howard) near Sydney, W. W. Froggatt.

4. SITZUNGSBERICHTE DER KAIS. AKADEMIE DER WISSENSCHAFTEN. Math.-Naturwiss. Classe. cii, 10, Abt. i, Vienna, December, 1893. [Re-

ceived Dec. 17, 1894]—Monograph of the digging wasps allied to *Nysson* and *Bembex*, A. Handlirsch, 7 pls.—ciii, 1-3, Abt. i, January-March, 1894. The copulatory feet of the Polydesmidæ, C. Attems, 4 pls.; ciii, 1-4, Abt. iii, January-April, 1894. Researches on the physiology of facetted eyes, A. Kiesel, figs., 1 pl.

5. PROCEEDINGS OF THE NEBRASKA ACADEMY OF SCIENCES, iv, pp. 16-22. [Lincoln], 1894.--A list of Nebraska butterflies, H. G. Barber.

6. ATTI DEL R. INSTITUTO VENETO DI SCIENZE, LETTERE ED ARTI, li, 7. Venice, June 18, 1893. [Received Dec. 17, 1894.]—Description of and proposals for combatting *Diaspis pentagona* Targ. Tozz., G. Canestrini, P. A. Saccardo and A. Keller.

7. THE TRANSACTIONS OF THE ENTOMOLOGICAL SOCIETY OF LONDON, 1894, pt. iv, December, 1894.—A monograph of British Braconidæ, pt. v, Rev. T. A. Marshall, 2 pls. Catalogue of the Pterophoridæ, Tortricidæ and Tineidæ of the Madeira Islands, with notes and descriptions of new species, Rt. Hon. Lord Walsingham. Palæarctic Nemouræ, K. J. Morton, 2 pls. Supplementary notes on the Scolytidæ of Japan, with a list of species, W. F. H. Blandford. Some remarks on the antennæ of insects, C. O. Waterhouse.

8. LE NATURALISTE. Paris, Dec. 1, 1894.—The nymph of *Batocera rubus*, L. Planet.

9. ANNALES DE LA SOCIETE ENTOMOLOGIQUE DE FRANCE, lxii, 1. Paris, July 31, 1893. [This and other parts received Dec. 18, 1894.]—Revision of the species of the genus *Phlœophthorus* Woll. and description of a new genus of Scolytidæ, F. Guillebeau. Note on some ants of the Galapagos Islands, C. Emery, fig. Remarks on *Bembex*, P. Marchal. Note on the production of sounds by ants and on the organs which produce them, C. Janet. Note on larvæ of *Dermatobia* from Brazil, Dr. R. Blanchard.—2. Oct. 25, 1893. European and circum-Mediterranean Scydmænidæ, J. Croissandeau, 2 pls. (cont. in 4e Tri.) Descriptions of new species and genera of the order Araneæ, E. Simon (cont. in 3e Tri.). Biological observation on *Timarcha generosa*, P. Lesne. Note on the organ called spatula sternalis and on the Malpighian tubes of Cecidomyia, A. Giard, figs., [and farther in the volume], Dr. A. Laboulbene. Comparative study of the development of the egg in the viviparous and oviparous fleas, Dr. V. Lemoine. A method of destroying hornets, Dr. F. Heim. Attempts at the destruction of *Cossus ligniperda*, id. Habits and metamorphoses of *Molytes coronatus*, J. Fallou. Contributions to the natural history of the larvæ of Buprestidæ—the first larva of *Julodis onopordi* F., J. K. d'Herculais, figs. Contributions to the study of parasitic Diptera, Dr. R. Blanchard, figs. Note on some types of Diptera of the family Bibionidæ, C. Brongniart. On a Coleopterous larva vomited by an infant in Senegal, Dr. R. Blanchard, figs.—3. Dec. 30, 1893 (see E. Simon above). Biological observations on the Crabronidæ, P. Marchal, 1 pl. Observations on the galls produced on *Salix babylonica* by *Ne-*

matus salicis, followed by some reflections on the importance of phenomena of cecidiogenesis for biology in general, Dr. F. Heim. On the pigmented organ (embryonic testicle) of the caterpillar of *Ephestia kuehniella*, J. Danysz. Some remarkable Hemiptera, A. Giard. A Dipter parasitic on Myriapods of the genus *Lithobius*, A. Giard. Copulation of *Clytus tropicus*, F. Decaux. Habits and metamorphoses of *Lyda stellata*, *Cryptohypnus riparius*, Capt. Xambeu. Fossil Syrphidæ of the Tertiary amber, F. Meunier.—4. April 30, 1894 (see Croissandeau above). Note on the fossil Thysanura of the genus *Machilis* and description of a new species, H. Gadeau de Kerville, fig. Apparatus for rearing and observing ants and other small animals which live concealed and require a humid atmosphere, C. Janet. Change of instinct in *Megachile centuncularis*, A. Giard.

10. Revue Biologique du Nord de la France, vii, 2. Lille, November, 1894.—Remarks on the organization and comparative anatomy of the last segments of the body of Lepidoptera, Coleoptera and Hemiptera, A. Peytoureau, figs., 7 pls.

11. Bulletin de la Societe des Sciences Historiques et Naturelles de Semur (2), 7, 1894.—The "nonne" (*Psilura monacha*), description, habits and metamorphoses, invasions, etc., M. de Gail.

12. Jahresbericht der Naturforschenden Gesellschaft Graubundens (N. F.), xxxvii. Chur, 1894.—On the actual origin of formic acid in honey, Dr. A. von Planta.

13. Bibliotheca Zoologica, heft 18. Stuttgart, E. Nägele.—Comparative physiological and anatomical researches on the senses of smell and taste and their organs, with introductory considerations from general comparative physiology of sense, Dr. W. A. Nagel, 7 pls.

14. Annales de la Societe d'Agriculture, Sciences et Industrie de Lyon (7), i, 1894.—Relations between the peculiarities of the cocoons of *Bombyx mori*, J. Raulin.

15. Lepidoptera Indica by F. Moore. Pt. xix. London: L. Reeve & Co., 1894 [Received Dec. 24, 1894.]—Contains pp. 161–176 of vol. ii, pls. 139–146 (Elymniinæ, Amathusiinæ).

16. Nature. London, Nov. 29, 1894.—Indo-Malayan spiders, R. I. Pocock. [Review of T. and M. E. Workman's "Malaysian spiders," Belfast, 1894, pts. 1–3.]—December 6. Origin of classes among the "parasol" ants, H, Spencer.—December 13. Indo-Malayan spiders, B. A. Muirhead. The warble fly, W. F. Kirby, figs. [Review of Miss E. A. Ormerod's "Observations on Warble Fly or Ox Bot Fly," London, 1894].

17. Biologia Centrali-Americana. Pt. cxviii. London, October, 1894.—Coleoptera: vol. ii, pt. 1, pp. 441–464, pl. xiv, D. Sharp [Adimeridæ, Colydiidæ]; vol. iii, pt. 1, pp. 257–264, G. C. Champion [Elateridæ]; vol. vii, pl. xi, H. S. Gorham [Coccinellidæ]. Lepidoptera-Rhopalocera: vol. ii, pp. 361–376, pl. lxxxii, F. D. Godman & O. Salvin

[Hesperidæ]. Rhynchota-Homoptera, vol. ii, pp. 25–56, pl. ii, W. W. Fowler.

18. COMPTE-RENDU. SOCIETE PHILOMATHIQUE DE PARIS. Dec. 8, 1894.—Salivary glands of the Apinæ (*Apis mellifica* ♂ and ☿), M. Bordas.

19. ZOOLOGISCHER ANZEIGER. Leipsic, Dec. 17, 1894.—On the life-history of *Chermes abietis* L. and *C. strobilobius* Kalt., N. Cholodkowsky.

20. BULLETIN OF THE AMERICAN MUSEUM OF NATURAL HISTORY, vi, art. xviii. New York, December, 1894.—On North American moths, with the description of a new species of *Tripocris*, W. Beutenmüller.

21. ATTI DELLA SOCIETA VENETO TRENTINA DI SCIENZE NATURALI (2), ii, 1. Padua. Dated 1895, received Jan. 1, 1895.—Embryology of the Acari, F. Supino, 3 pls.

22. KONGLIGA SVENSKA VETENSKAPS-AKADEMIENS HANDLINGAR (n. s.), xxv, 2. Stockholm, 1893–94.—On the classification and distribution of the palæarctic Collembola, H. Schott, 7 pls.—xxiv, 1891. Scandinavian Neuroptera-Trichoptera, H. D. J. Wallengren. BIHANG of the same, xviii, iv, 8, 1893. On the cortical innervation and capillaries of Lepidopterous larvæ, E. Holmgren, 1 pl. [all received Dec. 26, 1894.]

23. CATALOGUS HYMENOPTERORUM hucusque descriptorum systematicus et synonymicus Auctore, Dr. C. G. de Dalla Torre. Vol. ix: Vespidæ (Diploptera), Lipsiæ. Sumptibus Guilelmi Engelmann, MDCCCXCIV, 181 pp.

24. SOCIETAS ENTOMOLOGICA. Zurich-Hottingen, Dec. 1, 15, 1894.—Lepidopterological notes from America, H. Ficke. *Ctiorhynchus ovatus* L. in North America, H. J. Wickham (= H. F. Wickham!). *Carpocapsa saltitans* from Mexico, M. R[uhl].

25. PROCEEDINGS OF THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND, iv, 12. New Brighton, Dec. 8, 1894.—Two additions to the local list of dragonflies, W. T. Davis.

26. THE CANADIAN ENTOMOLOGIST. London, Ont., December, 1894. —Some Psychodidæ from Long Island, N. Y., N. Banks. A new Pericopid and some new Zygænidæ from Cuba, B. Neumoegen. Some little-known species of *Oeneis*, H. J. Elwes. The Coleoptera of Canada—vi, H. F. Wickham, figs. A new Attid from Jamaica, T. D. A. Cockerell. Entomological notes, C. H. Fernald. List of the dragonflies of Corunna, Mich., D. S. Kellicott. Notes on *Alypia mariposa*, J. B. Lembert. Notes on Quebec Coleoptera, A. W. Hanham. On the geographical distribution of some common scale insects, L. O. Howard. *Staphylinus cæsareus* Cederh. and *S. erythropterus* L. in Canada, W. H. Harrington. —January, 1895. The genera in the Noctuidæ, A. R. Grote. The American species of *Perineura*, A. D. Macgillivray. Coleoptera of Lake Worth, Florida, Mrs. A. T. Slosson. Genitalic classification, Rev. G. D. Hulst. Notes on *Carama* and other Megalopygidæ, H. G. Dyar. On a new scale insect found on plum, T. D. A. Cockerell. Preliminary studies in Siphonaptera, C. P. Baker.

27. PSYCHE. Cambridge, Mass., January, 1895.—On the Rhopalomeridæ, S. W. Williston. A Psyllid leaf-gall on *Celtis*, probably *Pachypsylla celtidis-pubescens* Riley, C. H. T. Townsend. *Phthiria sulphurea* Loew, T. D. A. Cockerell. Life-history of *Clisiocampa fragilis* Stretch., H. G. Dyar. Uncertainty of the duration of any stage in the life-history of moths, C. G. Soule.

28. THE ENTOMOLOGIST'S RECORD. London, Dec. 15, 1894.—The life-history of a Lepidopterous insect, etc., chap. iii: Parthenogenesis or Agamogenesis, J. W. Tutt.

29. THE CECROPIAN. Milton, Mass., December, 1894.—Entomological contrivances, S. N. Dunning, W. L. W. Field, M. L. Barner.—January, 1895. A list of the Lepidoptera-Heterocera of Bridgewater and Brockton, Mass., W. L. Tower.

30. AMERICAN SPIDERS AND THEIR SPINNINGWORK.—A Natural History of the Orbweaving Spiders of the United States with special regard to their industry and habits. By Henry C. McCook, D.D. Vol. iii. With descriptions of orbweaving species and plates (dated Academy of Natural Sciences of Philadelphia, A. D. 1893, on the title page, but the preface bears date of July 3, 1894, while the volume was received by the Academy Dec. 17, 1894). With this third volume Dr. McCook completes this book on the American spiders, of which the first volume appeared in 1889, the second in 1890. The work, the author tells us, has engaged his thoughts for more than twenty years, and he naturally expresses his profound satisfaction on having completed it. The NEWS takes great pleasure in congratulating him on this happy termination of his labors. The third volume comprises 406 pages and thirty plates. Of the text, 131 pages and 98 figures therein treat of general habits, biological miscellany and anatomical nomenclature, while the remainder is occupied by descriptions of genera and species. The plates contain both plain and colored illustrations of this latter part of the text.

31. GARDEN AND FOREST. New York, Jan. 2, 1895. The chestnut weevil, R. A. S., Ed. [C. S. Sargent].

32. TRAVAUX DE LA SOCIETE DES NATURALISTES DE ST.-PETERSBOURG. Section de Zoologie et de Physiologie, xxiv, 2, 1894.—The embryonic development of *Ixodes calcaratus* Bir., J. Wagner, 4 pls.

33. BULLETIN DE L'ACADEMIE IMPERIALE DES SCIENCES DE ST.-PETERSBOURG. (N. S. iv), xxxvi, 1–11, December, 1893.—Synoptic revision of the Meloidæ of the genus *Ctenopus* Fisch., A. Semenoff.—12–22. March, 1894. Experimental studies on the lymphatic glands of invertebrates, A. Kowalevsky. [Both received Jan. 7, 1895].

34. SCIENCE. New series, vol. i, No. 1. New York, Jan. 4, 1895.—The need of a change of base in the study of North American Orthoptera, S. H. Scudder.

35. MITTHEILUNGEN AUS DEM NATURWISSENSCHAFTLICHEN VEREIN FUR NEU-VORPOMMERN UND RUGEN IN GREIFSWALD, XXV. Berlin, 1894.

—On new and little-known Neuroptera of the family Megaloptera Burm., Dr. A. Gerstaecker.

36. THE BRITISH NATURALIST. London, Dec. 15, 1894.—Some curious aquatic larvæ, G. Swainson, 1 pl. A catalogue of Irish Coleoptera, Rev. W. F. Johnson. Synonymic list of the genera of the British Araneida, Rev. F. O. Pickard-Cambridge.

37. FEUILLE DES JEUNES NATURALISTES. Paris, Jan. 1, 1895.—Resistance of Zygænids to cyanide of potassium. A dipterous parasite of Orthoptera, C. Marchal. Libellulæ and ants, P. Zurcher.

38. ANATOMISCHER ANZEIGER. Jena, Dec. 19, 1894.—Spermatogenesis of *Caloptenus femur-rubrum*, E. V. Wilcox.

39. ZOOLOGISCHE JAHRBUCHER, viii, 2. Jena, Dec. 10, 1894.—On the structure and development of the endosternite of the Arachnida, W. Schimkewitsch, 2 pls.

40. PROCEEDINGS OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, 1894, pp. 419–420.—A supplementary note to Mr. Johnson's list of Jamaican Diptera, T. D. A. Cockerell.

41. MEMOIRES DE LA SOCIETE ZOOLOGIQUE DE FRANCE, 1894, pp. 375–392.—Observations and experiments on the means of protection of *Abraxas grossulariata* L., F. Plateau, figs.

42. LEITFADEN FUR DAS STUDIUM DER INSEKTEN und Entomologische Unterrichtstafeln. Von Dr. G. Rörig. Berlin, R. Friedländer & Son, 1894, 43 pp., 8 pls.

43. TWENTY-FIFTH ANNUAL REPORT of the Entomological Society of Ontario. Toronto, 1894.—Insects collected in Bermuda during the Winter of 1894, G. Geddes. Common names for butterflies—shall we have them?, H. H. Lyman. The butterflies of the eastern provinces of Canada, Rev. C. J. S. Bethune, figs. The pitcher plant moth (*Exyra Rolandiana* Grt.), J. Fletcher. *Catastega aceriella* Clemens, *Semasia signatana* Clemens, Rev. T. W. Fyles. Notes on a few Canadian Coleoptera, W. H. Harrington, fig. Food, feeders and fed, Rev. T. W. Fyles, figs. An attack of *Ephestia interpunctella*, H. A. Stevenson. The economic value of parasitism, F. M. Webster, figs. A re-appearance of *Pieris protodice* Boisd., J. A. Moffat. Remarks on the structure of the undeveloped wings of the Saturniidæ, id. Bordeaux mixture as a deterrent against flea beetles, L. R. Jones. The gypsy moth (*Ocneria dispar* L.), J. Fletcher, figs. The San José (*Aspidiotus perniciosus* Comstock), id., figs. Injurious fruit insects of the year 1894, id., figs. (Some of the papers read at the sixth annual meeting of the Association of Economic Entomologists, already recorded in the NEWS, are here reprinted).

44. PROCEEDINGS OF THE ENTOMOLOGICAL SOCIETY OF WASHINGTON, iii, 2, Jan. 8, 1895.—Additions to the lists of North American termitophilous and myrmecophilous Coleoptera, E. A. Schwarz. Neuration of the wings of the Tenthredinidæ, C. L. Marlatt, figs. Notes upon *Belostoma*

and *Benacus*, C. V. Riley, figs. The eggs of *Ceresa bubalus* Fab. and those of *C. taurina* Fitch, id., figs. On the habits of some Longicorns, F. H. Chittenden. Note on the mouth parts of *Stenopelmatus*, L. O. Howard. Note on the discovery of a new Scolytid, with brief description of the species, A. D. Hopkins. Notes on food habits of *Corthylus punctatissimus*, id. Annual address of the President—Longevity in insects, with some unpublished facts concerning *Cicada septendecim*, C. V. Riley.

45. BERLINER ENTOMOLOGISCHE ZEITSCHRIFT, xxxviii, 3-4, January, 1894.—Monographic contributions to the beetle-fauna of Central America, A. F. Nonfried. Contributions to the classification of the Muscidæ, E. Girschner, figs. On some palæarctic Chilopoda, C. Verhoeff, figs. The history of the so-called breast-bone of the Cecidomyias with a recollection of Carl Ernst von Baer, C. R. Osten Sacken. Two critical remarks about the recently published third part of the *Muscaria schizometopa* of MM. Brauer and Bergenstamm; also a notice on Robineau-Desvoidy, id. —xxxix, 1. May, 1894. The extra-European Sciaras of the Königl. Museum für Naturkunde in Berlin, E. H. Rübsaamen, figs., 3 pls. On the atavic index-characters with some remarks about the classification of the Diptera, C. R. Osten Sacken. Dipterological studies—i. Scatomyzidæ, T. Becker, 6 pls.—xxxix, 2. July, 1894. On Australian Zoocecidæ and their producers, E. H. Rübsaamen, 7 pls. Synonymica about Tipulidæ, C. R. Osten Sacken.—xxxix, 3. October, 1894. The ants of Rio Grande do Sul, Dr. H. von Jhering, figs., 1 pl. [All the above numbers of this Zeitschrift received Jan. 10, 1895!].

46. THE NATURALISTS' JOURNAL. London, January, 1895.—Pupa hunting, H. G. Knaggs. *Abraxas grossulariata* and its varieties, S. L. Mosley, figs. Furniture beetles, id., figs. Some underground beetles, Rev. T. Wood.

47. THE ENTOMOLOGIST. London, January, 1895.—The pigments of the Pieridæ: a contribution to the study of excretory substances which function in ornament, F. G. Hopkins.

48. THE ENTOMOLOGIST'S MONTHLY MAGAZINE, January, 1895.—Caustic potash as an entomological detergent, W. F. H. Blandford. Relaxing insects without aqueous vapor, H. G. Knaggs. *Vesperoctenus* Bates, and its systematic position, C. J. Gahan.

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49. KRITISCHES VERZEICHNISS der Myrmecophilen u. Termitophilen Arthropoden * * * von E. Wasmann S. J. Berlin, Felix L. Dames, 1894. Under this title Dr. Wasmann, the greatest living writer on the subject, has given an annotated catalogue of all the known species of Arthropods which he considers as properly coming under the head of myrmecophiles and termitophiles, after eliminating the element of accidental or simply occasional visitors which have made a respectable percentage of most foregoing lists.

After a short introduction treating of the general subject and its proper study, the author gives a table of the number of species in the various

groups of Arthropods mentioned in the body of the work. From this table we learn that the entire number of myrmecophilous insects recorded from the globe, and including several which, while not actually known to have this habit, are placed here on account of structural peculiarities which indicate as much, reaches 1177. Of these 993 are Coleoptera, the best represented families counting up as follows: Staphylinidæ, 263; Paussidæ, 169; Histeridæ, 128; Pselaphidæ, 113; Clavigeridæ, 89. Thirty families of beetles are mentioned as more or less certainly myrmecophilous, and several of them contain from 15 to 40 species, each of which live with ants. The Strepsiptera, which American writers have usually treated as Coleoptera, furnish one species taken from the hind-body on a Ceylonese ant.

The Hymenoptera furnish 38 myrmecophiles, of which 22 are ants, and 14 belong to the parasitic families Braconidæ, Chalcididæ and Proctotrupidæ. The Lepidoptera have 26 members here, the Diptera 18, the Orthoptera 7, the Pseudoneuroptera 1, the Rhynchota 72, the Thysanura 20. Myriapoda are considered doubtfully included, or more likely simply accidental or inimical visitors. There are 26 spiders and 34 Acarina. The Crustacea (Isopoda) have 9 representatives.

The termitophiles are much less numerous, reaching the number of 105, divided thus: Coleoptera, 87 (of which 5 are Carabidæ, 59 Staphylinidæ, 5 Pselaphidæ, 1 Silphid, 1 Lathridiid, 7 Histeridæ, 6 Scarabæidæ, the Curculionidæ and Chrysomelidæ being doubtful), Hymenoptera 6, Lepidoptera 2, Diptera 2 (doubtful), Orthoptera doubtful, Pseudoneuroptera 4, Rhynchota 3, Thysanura 1. The Arachnoidea have four species.

After this tabulated statement comes a bibliography of the subject numbering over 500 titles of greater or less importance, interspersed with critical notes on their value. Next follows the catalogue proper, a list of species classified first into families which are then divided into myrmecophilous or termitophilous species. In each case a reference or note shows whence the information is derived, and where other attention is needed it is given. A supplement of 19 pages contains descriptions of new species, among them a number of North American forms. The whole is well indexed and forms a work which will forever reflect credit on its author and must form an essential part of the library of the student of this fascinating branch of Entomology.—H. F. WICKHAM.

INDEX TO THE PRECEDING LITERATURE.

The number after each author's name in this index refers to the journal, as numbered in the preceding literature, in which that author's paper was published; * denotes that the paper in question contains descriptions of new North American forms.

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Doings of Societies.

PHILADELPHIA, Jan. 8, 1895.

A stated meeting of the Feldman Collecting Social was held at the residence of Mr. H. W. Wenzel, 1509 S. Thirteenth Street. Members present: Messrs. Laurent, Haimbach, Boerner, Seeber, Hoyer, E. Wenzel, Trescher, Fox, Dr. Castle, Johnson, H. W. Wenzel and Schmitz. Honorary member: Dr. Henry Skinner. Meeting called to order at 8.50 P.M. President Laurent presiding. The annual reports of the Secretary and Treasurer were read and approved, following which the President, Mr. Philip Laurent, delivered the annual address, reviewing the history of the Social since its organization, and, upon motion of Dr. Skinner, seconded by Mr. Fox, the same was ordered to be incorporated in the minutes.

THE PRESIDENT'S ADDRESS.

The Past, Present and Future of the Feldman Collecting Social.—Looking backwards some six or seven years I see before me a number of gentlemen gathered together in the entomological den of our host, Mr. Henry Wenzel. What are they here for? What are they doing? What could have induced these men with comfortable homes to venture out such a night as this? They have met to form an entomological club, or more strictly speaking a social. They are discussing rules and laws to govern the same, and the selection of a suitable name by which the club shall be known. What brought them together? love of companionship and the advancement of their entomological studies, nothing more, nothing less. No doubt all those present this evening, who took part in the first meeting had their doubts as to the success of the venture, doubts which have vanished long before this. At the time the Social was formed some thought it rather strange that another entomological society should be formed in a city wherein there was already such a society in existence whose reputation for its collections, library and labor in the field of entomology was known throughout the world. The fact was, that many of those attending the meetings of the American Entomological Society, many of whom were members of the said society, did not find the social feature represented there to any great extent, and it is perhaps well that it should be so, otherwise in time the social feature might eventually rule the meetings, which would certainly bring about a deplorable state of affairs. The fact is, the rooms of the American Entomological Society are for work, while the rooms of the Feldman Collecting Social are for social intercourse and pleasure, at least this is the case on the second Tuesday of each month, while it is true that during the rest of the month considerable entomological work is done, especially by our host, Mr. Wenzel.

One year after the organization of the Social there was found to be no decrease in the membership, in fact there never has been any. During the second year two of the members resigned from the Social, but their

places were immediately filled by some of those waiting for an opening. The membership has since grown, so has the interest in the Social, and I might add the interest in entomology, for no doubt social intercourse among entomologists helps to stimulate to greater effort in unraveling entomological problems.

We are now about seven years old, and the present time finds no abatement of the interest in the Social's affairs; several new members have been recently added, and at the present rate of increase it will soon be necessary to hang out the sign—"standing room only." Another feature of the present time is, that the minutes of our meeting are thought of sufficient importance to warrant the editors of the ENTOMOLOGICAL NEWS publishing them in their journal under the head of "Doings of Societies." Up to the present, good health, so essential to hard work in the field, has been enjoyed by the majority of the members; our collections have increased wonderfully and many rare species have been added. But, as to the future, who can tell? As far as indications go, the outlook could not be brighter. Prosperity has been ours since the Social started; what is to hinder its continuing? Our treasury is somewhat different from that of the U. S. it is true, ours being full, while its is comparatively empty. Various trips have been mapped out for the coming season, in anticipation of which we are looking into the future with much pleasure. That the Social may prosper in every way and have a long and profitable life is the wish of your retiring President, Philip Laurent.

Mr. Boerner exhibited two boxes of Coleoptera, being his re-arranged collection of water beetles. He stated that out of 108 species represented, 82 were found in Pennsylvania and New Jersey. Mr. Seeber exhibited a number of cocoons taken from the trunk of a palm which were evidently made by the larvæ of a weevil, as a dead imago was found in one of them. He received them from Mr. Louis Schneider, of Philadelphia. Dr. Skinner stated that there appeared some uncertainty among entomologists in reference to the manner of marking the data on mounted specimens. Some mark the month first and some the day. He therefore suggested, as a remedy, to first mark the month in Roman numerals followed by the day of the month in Arabic.

On the invitation of Dr. Skinner, it was moved by Mr. H. W. Wenzel that the next meeting be held at the Doctor's residence, Tuesday, February 12th, and the Secretary be instructed to notify the members of the place of meeting several days previous.

The election of officers for the ensuing year resulted as follows, by a unanimous vote:

President.—Mr. JAMES H. BLAND.
Vice-President.—Dr. DAVID M. CASTLE.
Treasurer.—Mr. H. W. WENZEL.
Secretary.—Mr. THEO. H. SCHMITZ.

No further business being presented the members adjourned to the annex to their annual banquet. THEO. H. SCHMITZ.

The Entomological Section

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

PROCEEDINGS OF MEETINGS.

The following papers were read and accepted by the Committee for publication in ENTOMOLOGICAL NEWS:

DESCRIPTIONS OF NEW HYMENOPTERA.

By T. D. A. COCKERELL, N. M. Agr. Exp. Station.

Sphærophthalma prunotincta n. sp.—♀ 14 mm. long; of the general build of *sumichrasti*, but the thorax somewhat longer and the head decidedly smaller. The coloration of the thorax resembles that of *sumichrasti*, but the black triangle has its base about the hind margin (instead of the front margin) of the prothorax. The second segment of the abdomen differs totally from that of *sumichrasti*, being a dull plum-color, with two yellowish spots. Color dark pinkish brown, with black and pale yellowish or cream-colored pubescence. Head covered with pale yellowish hairs as in *sumichrasti*, eyes lashed with long black hairs. Antennæ black, scape covered with pale hairs. Dorsum of thorax covered with yellowish hairs, except a large mid-dorsal heart-shaped patch (or, one might say, rounded triangle), with its base as above mentioned, and its apex on the upper part of the metathorax. Abdomen elongate pyriform; first segment broadened and sessile, its suture with the second somewhat constricted. Second segment above strongly reticulate, pinkish brown, with rather sparse, erect hairs, a median patch of appressed black hairs, with a round patch of appressed cream-colored hairs on each side of it, and a fringe of cream-colored hairs bordered above by blackish. The third segment has a similar fringe of creamy-yellow hairs, but its exposed dorsal surface is also covered by such hairs. The remaining segments show the yellowish fringe to the sides, but their dorsal surface is covered by a large black blotch; underside of abdomen with long yellowish hairs. On the second segment the yellowish fringe intrudes mid-dorsally into the blackish area, giving the appearance of a yellowish spot, which forms an equilateral triangle with the two yellowish dorsal spots. Legs pinkish brown, with the joints and the spines black; the large spines at the apex of each tibia are very distinctly serrate on their inner margin,—a character also noticed in *sumichrasti*, *occidentalis*, *dugesii* and *orcus;* while *megacantha* is of a different type, having the spines of the posterior tibiæ very feebly serrate, those of the middle ones not serrate, and those of the anterior ones serrate spiny on both sides.

The coloration of the abdomen in *prunotincta* is peculiar. The dark plum-colored tint is wholly due to the dermis, all the hairs being either black or yellowish. The black patch, which in *sumi-*

chrasti covers the whole of the dorsum of the third segment, is in *prunotincta* shifted backwards, so as to have its upper margin on the fourth segment.

In *sumichrasti* the yellow bordering the second segment becomes deeper, almost orange, in tone, and much greater in extent; while the small intrusion into the black mentioned in *prunotincta* becomes in *sumichrasti* a large, clean-cut notch in the black middorsum of the segment. Here again we see the markings of *sumichrasti* shifted backward in *prunotincta*, and the same is the case as above explained, also on the thorax.

Comparing *dugesii*, *prunotincta* and *sumichrasti*, one sees that in spite of great superficial differences of color they are nearly related; and on further reflection, there appear good reasons for regarding *dugesii* as furthest from, and *prunotincta* nearest to their common ancestor. It may not be out of place to dwell a little on this phase of the subject, and so depart from the usual dry detail of descriptive entomology!

In *prunotincta* and *sumichrasti* we find yellow hairs, but none scarlet. In *dugesii* beautiful pinkish scarlet hairs appear on the abdomen, while in the little *heterchroa* they have extended to the head and thorax. In all groups of animals, it is recognized that yellow and yellow colors are intimately related, and that red is a later product of metabolism than yellow; thus red forms vary to yellow, but not yellow to red, except in the form of gradual red suffusion. Red varying suddenly to yellow is regarded as atavism; thus, for example, the red *Lopidea media* has a yellow variety, *robiniæ* Uhler, which we hold to be either ancestral or atavistic in its nature.

It follows, therefore, that we have presumptive evidence for regarding *sumichrasti* as an older type than *dugesii*, and *dugesii* as older than *heterchroa*. On examining the maculation we find, as above stated, that the markings of *sumichrasti* are thrown about a segment *backwards* in *prunotincta*. But in *dugesii*, compared with *sumichrasti*, they appear to be slightly thrown *forwards*, so that, for example, the black spot of the apical half of the abdomen intrudes on the second segment, and the black proper to the second segment is pushed to its base. Consequently, as *sumichrasti* falls, in regard to its maculation, between *dugesii* and *prunotincta*, and as we have held *dugesii* to be a later type

than *sumichrasti*, there seems a reasonable probability that *prunotincta* is an older type than either.

At this point the little Mexican *S. arachnoides* becomes interesting. Colored black and yellow, like *sumichrasti*, its markings are nevertheless thrown back in the manner of *prunotincta*.

Thus we get a series of types, from the oldest to the newest, in *prunotincta*, *arachnoides*, *sumichrasti*, *dugesii*, *heterochroa*. This series is Mexican in its distribution, but extends northward (in *heterochroa*) to the region of the Organ Mountains in N. Mexico.

The unique type of *prunotincta* is from Guanajuato, Mex., found by Dr. A. Duges.

Sphærophthalma myrmicoides n. sp.—♀ about 4 mm. long, rufous, sparsely hairy. Head subcircular, its angles rounded, a little wider than thorax, strongly punctate; very sparingly pubescent with yellowish white hairs, which do not interfere with its general color, and are not visible without a lens. Flagellum blackish; mandibles large, with blackish ends, denticle blunt; the thorax, as seen from above, is shaped like the helmet of the British grenadier—that is to say, it is rounded and somewhat swollen anteriorly, narrowing posteriorly, without any marked constriction, and finally truncate at the rim of the rapidly descending metathorax; seen from the side, the thorax presents a triangle, the base of which is its inferior surface; in this triangle the anterior side is greater than the posterior (metathoracic) side, which it meets at an angle only slightly greater than a right angle. The surface of the thorax is strongly rugose-punctate; and the pale hairs, most numerous and longest on the metathorax, are so scanty as not to obscure the rufous color of the dermis. Legs yellowish, with the femora and tibiæ blackish, except at their ends. Abdomen elongate pyriform, shining rufous, distinctly punctate, sparsely covered with pale hairs above and below; last three segments almost black. First segment large, much broadened and sessile with the second, the suture between them inconspicuous.

Hab.—Columbus, Texas (H. F. Wickham). One specimen.

In color and general build, it reminds one of *ferrugata*, but is smaller than the smallest of that size-varying species, besides having the first segment of the abdomen different. *S. pygmæa*, from Blake's description, might closely resemble it; but I have regarded another specimen, from Las Cruces, N. Mex., as referable to *pygmæa*. This latter, which has the white fringe on the abdominal segments very distinct (whereas it is extremely inconspicuous in *myrmicoides*), at least agrees better with *pygmæa* than the present form, though it may quite possibly be distinct

and undescribed. *S. frigida* Smith, by the description, also seems similar, but I think is clearly distinct.

It is curious that from the same locality (Columbus, Texas), as well as from Morgan County, La., Mr. Wickham sends a small *Mutilla* which presents a close superficial resemblance to *S. myrmicoides*. This, which appears to be certainly *M. puteola* Bl., will be distinguished by the shape of the eyes and somewhat larger size, as well as the parallel-sided thorax and other characters which appear on minute examination.

[This species is closely related to *pygmæa*, differing by the want of white pubescence on the apical abdominal segments.—W. J. F.]

Sphærophthalma quadriguttata Say, var. *biguttata* sp. nov.—The two anterior spots of the second abdominal segment absent.

I have a ♀ from Columbus, Texas (Wickham). The remaining posterior spots are somewhat reduced in size, and for this reason rather further apart than in typical *quadriguttata*, though not nearly so far apart as in *wickhami*. This variety, though now first named, is alluded to by Blake.

The interest of this variety arises from the fact that in color markings, though not in structure, it shows a transition towards *wickhami*. It remains to be seen whether it occurs in the South only, or extends northwards with the typical form.

Brachycistis idiotes n. sp.—♂ shining chestnut-brown, head, legs and antennæ concolorous; wings hyaline, with a slight yellow tinge, venation fuscous, stigma shining, very dark brown. Length of anterior wing 15 mm.; of first abdominal segment 3½ mm. Antennæ long, as usual in the genus, first joint of flagellum about as long as second. Ocelli large, not situated on any black patch. Punctures of thorax distinct, but scattered, not numerous. Legs with pale long hairs, tibial spurs very long and slender, the longest one on the hind leg being about half as long as the first joint of tarsus. First abdominal segmens with erect pale hairs; its shape elongate, narrow, but slightly constricted at its junction with second. Second segment above not punctate. Wings ample, stigma a little over 2 mm. long, marginal cell just 2 mm. long, moderately narrow, terminally obliquely truncate, appendiculate. First submarginal longer than stigma; second triangular, about as long as marginal, its distal lower angle a right angle; third irregularly quadrate, narrowed above. First recurrent nervure joining second submarginal considerably beyond its middle; second recurrent joining third submarginal also beyond its middle. Minute hooks on costa of inferior wing thirteen in number (in *castanea* they are about seventeen).

Hab.—Las Cruces, N. Mex. (Cockerell).

Most unfortunately, the unique type was attacked by *Anthrenus* while I was away during the Summer, owing to its not having been transferred to the general collection. There is, however, quite sufficient remaining to give the differential characters.

The species is apparently nearest to *lepidus*, but differs in its long marginal cell and in the second submarginal receiving the first recurrent beyond the middle. In the latter character it resembles *alcanor*, from which it differs in color and other particulars. From *castanea* it is at once separated by its color and the shape of the first abdominal segment. In the generic description of *Brachycistis* "one very short, truncate marginal" must be altered to read "one marginal, truncate, often very short."

Note on habits of *B. idiotes*, etc.—In September *Brachycistis glabrellus*, *B. castaneus* and *B. elegantulus* were taken at light in the Mesilla Valley, the first named being especially numerous. Not a single *B. idiotes* or *B. lepidus* was to be seen, and when *idiotes* was described I knew it only from the one specimen taken in Las Cruces last Autumn. In November two *B. lepidus* were found drowned in the horse-trough at the Agricultural College—one on November 5th, the other on November 22d. In the same month two *B. idiotes* came to the lamp at my house in Las Cruces, one on November 21st, the other on November 25th. Another *idiotes* entered my house about the middle of December. During this period (November, December) nothing was seen of *glabrellus*, *castaneus* or *elegantulus*. Thus it is seen that *idiotes* and *lepidus* appear in late Autumn, after the Summer species have disappeared: to this fact must doubtless be ascribed the non-discovery, until last year, of so large and easily recognized a species as *idiotes*. The size of *idiotes* varies, the largest (type) is fully as large as *lepidus*, the smallest only 11 mm. long.—T. D. A. COCKERELL, December, 1894.

OBITUARY.

The death has been announced of Dr. GEORGE MARX, of Washington, D. C. Dr. MARX was well known as a writer on spiders and as the author of a catalogue of the described Araneæ of Temperate North America.

GEORGE D. BRADFORD, a promising young entomologist, and corresponding secretary of the New York Entomological Society, died at his home, in New York City, Nov. 24, 1894, of typhoid fever; he was born May 11, 1873.

BERTHOLD NEUMOEGEN died of consumption on January 21st.

ENTOMOLOGICAL NEWS for January, was mailed January 4, 1895.